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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,016	06/30/2003	Kazutaka Shibata	AI 288	1927

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EXAMINER

IM, JUNGHWA M

ART UNIT PAPER NUMBER

2811

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

### Application No.

10/608,016

### Applicant(s)

SHIBATA, KAZUTAKA

### Examiner

Junghwa M. Im

### Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3,4,6,8-12 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,4,6,8-12 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 6, 2006 has been entered.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation of “the gold portion of the post including a portion facing the passivation film/resin film interface, the gold portion of the post in direct contact with the passivation film/resin film interface.” It is confusing since the instant invention does not disclose this aspect. It appears that the portion 25c is “the gold portion of the post including a portion facing the passivation film/resin film interface,” however, the gold portion 25c is not in direct contact with passivation film/resin film.

Claims 9-12 are dependent on the rejected base claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 3-4, 6 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Saimoto et al. (US Pat. 6.730.595), hereinafter Saimoto.

Regarding claim 3, Saimoto discloses in col. 5, line 51-col. 6, line 39 a semiconductor device/semiconductor wafer, comprising:

a semiconductor substrate;

at least one of a protruding electrode (col. 4, lines 43-48 and col. 6, lines 11-15) and wiring (col. 6, lines 11-15) formed on one surface of the semiconductor substrate; and

a first resin film (resin having a low elastic modulus; col. 5, lines 51-61) formed on the one surface of the semiconductor substrate, and

wherein the first resin film has elasticity lower enough to reduce stress induced by a difference in thermal expansion coefficient between the semiconductor substrate and the first resin film (col. 6, lines 11-15), and

wherein a second resin film having one of higher and higher strength than the first resin film is formed on the other surface of the semiconductor device (col. 6, lines 22-27).

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Regarding claim 4, Saimoto discloses that an elastic modulus of the second resin film is 1 GPa to 100 GPa that is in the recited range of 15 GPa or higher (col. 6, lines 22-27).

Regarding claim 6, Saimoto discloses that the semiconductor substrate has a thickness of 50-350  $\mu\text{m}$  that is in the recited range of 200  $\mu\text{m}$  or less (co. 6, lines 5-6). And it is inherent that the Saimoto's semiconductor substrate is placed at a center of the semiconductor device in a thickness direction of a cross section thereof since the resin film is formed on the front and the back surfaces of the substrate, that is, the substrate is sandwiched between the resin films.

Regarding claim 14, Saimoto discloses that the semiconductor substrate has a thickness of 50-350  $\mu\text{m}$  that is in the recited range of 550  $\mu\text{m}$  or less (co. 6, lines 5-6).

Claims 8-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Wakamiya et al. (US Pat. Pub. 2002/0041013), hereinafter Wakamiya.

Regarding claim 8, insofar as understood, Fig. 1 of Wakamiya shows semiconductor device, comprising:

- a semiconductor chip (1);
- an electrode pad (2) formed on the semiconductor chip;
- a resin film (5) formed to cover a surface of the semiconductor chip; and
- a post (4) bonded to the electrode pad and provided to penetrate through the resin film, a portion (10) of which in close proximity to a junction portion with the electrode pad is made of gold (paragraph [0023]); and
- a passivation layer (3) on the surface of the semiconductor chip, between the semiconductor chip and the resin film and covered by the resin film so as to have a passivation

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film/resin film interface therein, the top gold portion of the post facing the passivation film/resin film and the bottom gold portion of the post is in direct contact with the passivation film/resin film.

Note that Wakamiya discloses that the post can be a single type/same type of metal (paragraph [0021] and [0022]), therefore, the entire post or the bottom portion of the post can be made of gold. Then, the bottom portion of the gold post is in direct contact with the passivation film/resin film since the bottom portion of the gold post extends through the passivation film/resin film.

Regarding claim 9, Fig. 1 of Wakamiya shows that the post includes a portion made of a metal material other than gold (paragraph [0021]).

Regarding claim 10, Fig. 1 of Wakamiya shows that the post includes a junction portion provided on a side of the electrode pad and made of gold, a tip end portion provided on a side of a tip end and made of gold and an intermediate portion provided between the junction and the tip end portion and made of a metal other than gold. Note that Wakamiya discloses that the post includes a plurality of the layers formed of same or different material (paragraph [0021]) and at least one of the layers can be formed of gold (paragraph [0021]).

Regarding claim 11, Fig. 1 of Wakamiya shows that passivation layer has a thickness greater than a thickness of the electrode pad and the gold portion of the post projects below a surface of passivation layer at the passivation film/resin film interface into direct contact with the electrode pad.

Regarding claim 12, Fig. 1 of Wakamiya shows the passivation layer has a thickness greater than a thickness of the electrode pad, and the gold portion of the post projects below a

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surface of passivation layer at the passivation film/resin film interface into confrontation with the electrode pad.

### *Response to Arguments*

Applicants' arguments with respect to pending claims have been considered but are moot in view of the new ground(s) of rejection.


### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junghwa M. Im whose telephone number is (571) 272-1655. The examiner can normally be reached on MON.-FRI. 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard T. Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jmi  
11/25/2006

  
Junghwa M. Im  
Examiner  
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